# Adult Mosquito Surveillance

Clark County

Year End Report

2002

# Clark County – Adult Mosquito Surveillance Report – 2002

## Introduction

This season (2002) Clark County Mosquito Control took on the task of doing their own mosquito surveillance. For the last four years this program had been contracted to Multnomah County Vector and Nuisance Control. The reasons for taking ownership of this program were numerous, not the least of which was financial. With West Nile Virus on the way it was felt that we should take the responsibility for our own area. To do this it was necessary to purchase new traps and educate, at least, one employee in the use of the traps and the identification process. Traps were purchased and arrived mid-season. One employee began the education process at the end of last year (2001) by taking classes from Jill Townsend of Multnomah County. Continuing education will be a goal so that this program will be fully operational in 2003.

The goals of the surveillance program are twofold. The first being to monitor mosquito populations for species identification and numbers. The second is to monitor for mosquito-borne viruses. As our program is new this year, no mosquito samples were sent to a lab for testing. A check with Multnomah County revealed that there were no viruses present in the samples that they submitted this year. In 2003 we will be submitting samples to the Oregon State Public Health Laboratory and possibly will have the capability of doing a pre-screening prior to sending samples to the lab.

The traps that were purchased and are being used by Clark County are the standard Encephalitis Surveillance Traps. These are the three part traps that are baited with dry ice as an attractant. The traps are pictured in the appendix. One advantage that Clark County has by doing this program ourselves is that we have access (by key) to all of our potential problem areas. With this access we can place traps in the most advantageous location to collect samples. Multnomah County did not have this access and therefore could only trap the periphery of our problem areas.

We also now have the capability to gather dead birds and send them to CDC to be tested for West Nile Virus. With these two programs in place we will be able to play a major role in the early warning system to protect the public health from West Nile Virus.

Two other programs that assist us with surveillance are the daily sampling program and our use of the daily river level at Vancouver. The sampling program is conducted by the crews in the field. When an area is checked for the presence of mosquito larvae a sample is brought to the shop if larvae are found. These samples are then placed in rearing jars and the larvae are allowed to grow to the adult stage. At that time they are identified as to species. This information tells us the type of mosquito found throughout the county and the type of habitat that rears a particular species. With this information we will be better able to respond to a potential West Nile outbreak if we know where the carrier mosquito is most apt to be found.

One last piece of information that we use is the daily river level. This information is checked and recorded daily. As the river level rises in the spring it alerts us to the possible onset of the floodwater mosquito (Aedes). There is a chart in the appendix that shows the river levels for the last three years. Notice that in 2001 the river level stayed below 6 feet. 2001 was a slow mosquito year. This year (2002) the river level stayed above 8 feet for a long period of time. This created an extended floodwater mosquito problem.

It is our goal, at the Clark County Mosquito Control District, to reduce mosquito populations in an effort to minimize the risk of mosquito-borne diseases. By implementing the programs mentioned above and using the information gathered from them we hope to meet that goal in the coming years.

# TRAPPING RESULTS
# 2002

***The following charts are representations of trapping done in 2002. They are broken down by areas and also include the numbers for individual traps. The charts represent only the number of mosquitoes that were placed under the microscope. In all, about 3000 mosquitoes were trapped and over 1100 underwent the identification process.***

# TRAPPING RESULTS

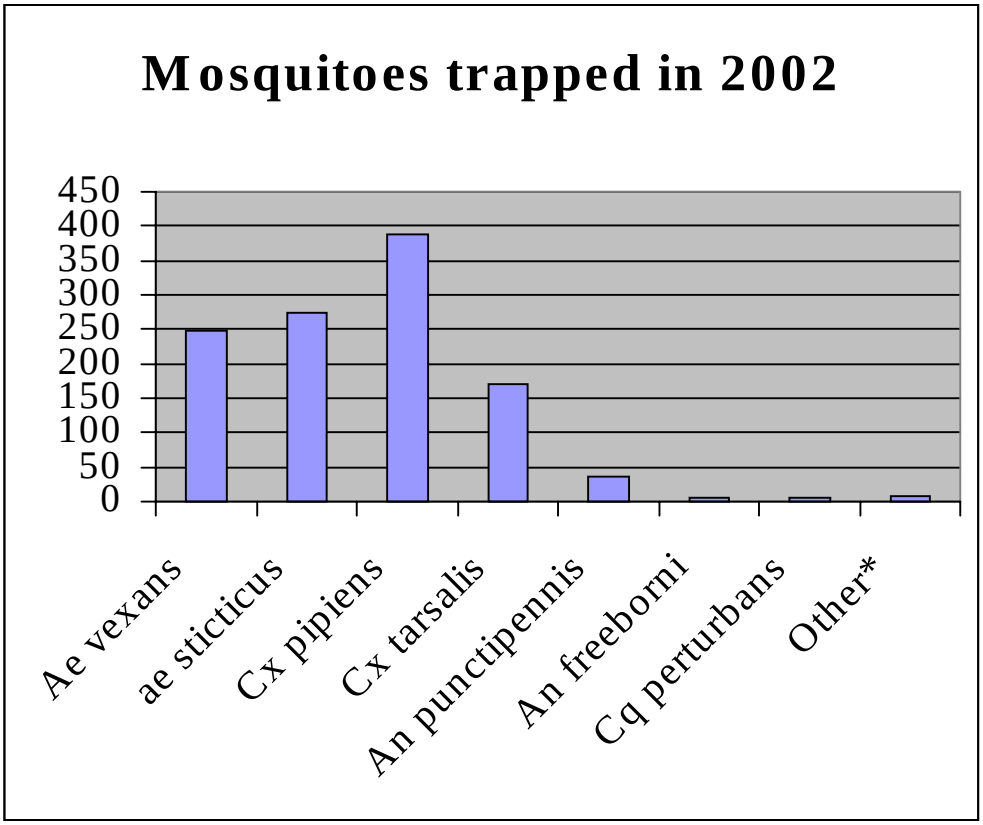
## COUNTYWIDE

This season Clark County Mosquito Control undertook its own trapping and identification program. For the past four years this program has been contracted to Multnomah County. Four new traps were purchased and one employee (Chuck Skov) was trained in the identification process. As our traps arrived fairly late in the season, only one round of trapping was conducted.

All of the significant areas of the county were surveyed. For the most part, no surprises presented themselves, with the exception of Salmon Creek. This can be seen in the following pages, which show the results from the different areas and individual traps. One other trapping was done late in the year (9-13-02) at the West Sewage Treatment Plant in Vancouver. A copy of the report that was sent to the treatment plant is included later in this report.

The chart below indicates which species of mosquito were found in the county this year and in the four years previous.

| 0 | Aedes Vexans | Ochlerotatus Sticticus | Aedes Cinereus | Ochlerotatus Sierrensis | Ochlerotatus Increpitus | Culex Pipiens | Culex Tarsalis | Anopheles Freeborni | Anophe/les Punctipennis | Culiseta Inornata | Culiseta Incidens | Culiseta Particeps | Culiseta Minnesotae | Coquillettidia Perturbans |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | **x** | **x** | **x** | **x** | | **x** | **x** | **x** | **x** | **x** | **x** | | | **x** |
| 1999 | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | | | **x** |
| 2000 | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | | **x** | **x** |
| 2001 | **x** | **x** | | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | | **x** |
| 2002 | **x** | **x** | **x** | | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | | **x** |




| SPECIES | NUMBER |
|---|---|
| Ae vexans | 248 |
| Ae sticticus | 275 |
| Cx pipiens | 389 |
| Cx tarsalis | 171 |
| An punctipennis | 35 |
| An freeborni | 6 |
| Cq perturbans | 6 |
| Other* | 7 |

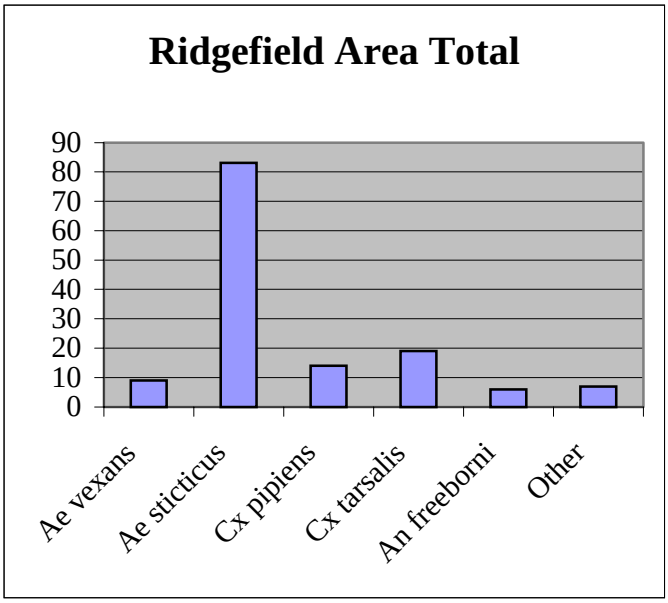
| * The "other" column includes: | |
|---|---|
| Aedes increpitus | 2 |
| Culiseta particeps | 1 |
| Culiseta incidens | 1 |
| Culiseta inornata | 3 |

The chart above shows the number of mosquitoes that were identified in our trapping program. Twelve traps were set out over a two-week span and approximately 3000 mosquitoes were collected. The number in any given trap ranged from 11 trapped in the Carty Unit of the Ridgefield Wildlife Refuge to 20-30 in the Steigerwald refuge. The results from individual traps are shown in following charts.

# RIDGEFIELD RESULTS

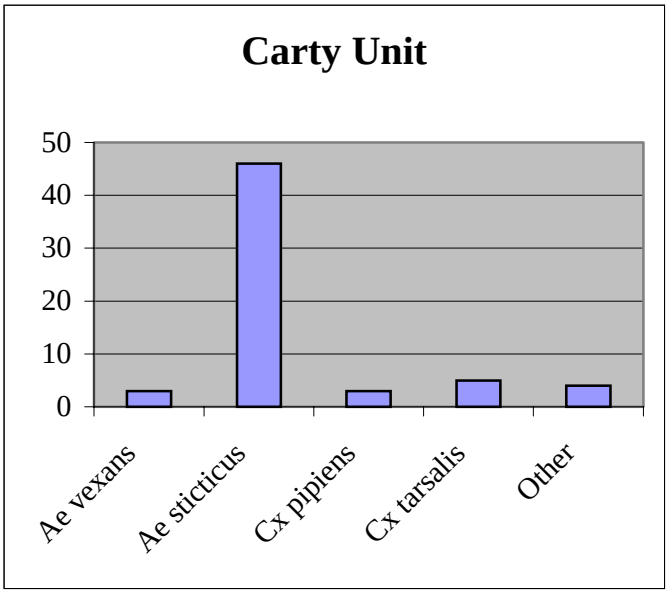
Three traps were placed in the Ridgefield are on July 2 of this year. The three traps collected over 1200 mosquitoes, with the majority (1100) coming from the Carty Unit of the Ridgefield Refuge. No real surprises here, as the majority of the mosquitoes were the floodwater mosquito (Aedes). Again, the charts reflect only the number of mosquitoes that were actually identified under the microscope.

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 9 |
| Ae sticticus | 83 |
| Cx pipiens | 14 |
| Cx tarsalis | 19 |
| An freeborni | 6 |
| Other | 7 |



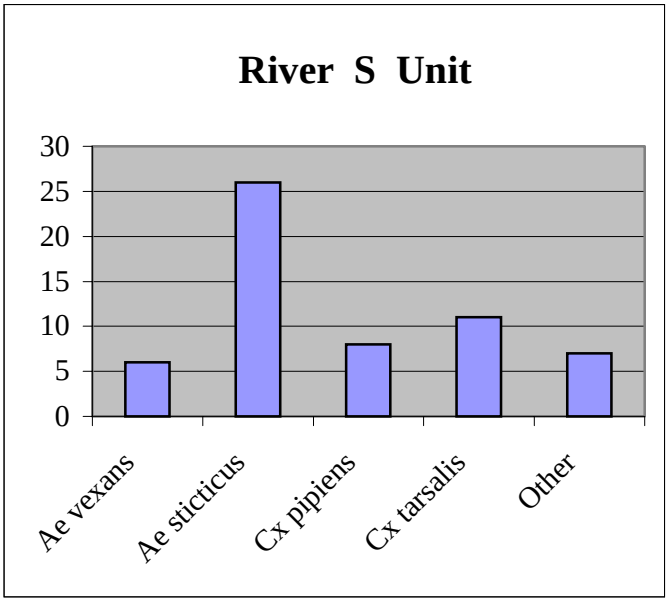

**CARTY UNIT**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 3 |
| Ae sticticus | 46 |
| Cx pipiens | 3 |
| Cx tarsalis | 5 |
| Other | 4 |



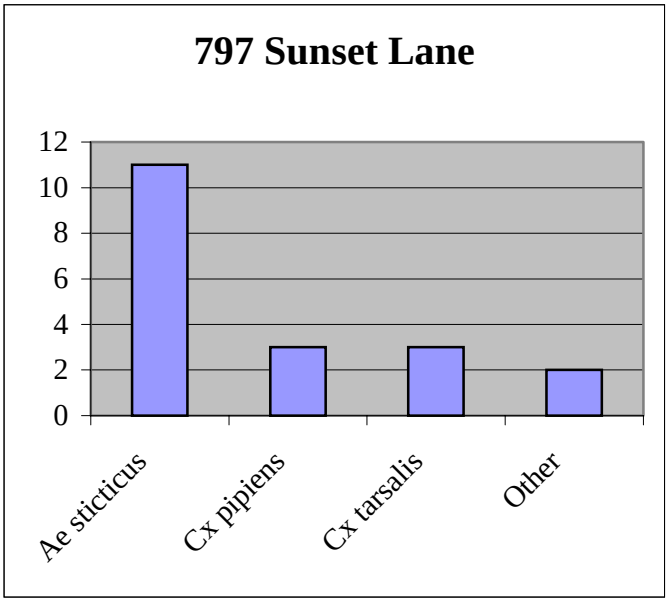
**RIVER S UNIT**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 6 |
| Ae sticticus | 26 |
| Cx pipiens | 8 |
| Cx tarsalis | 11 |
| Other | 7 |




**797 SUNSET LANE**

| SPECIES | NUMBER |
|---|---|
| Ae sticticus | 11 |
| Cx pipiens | 3 |
| Cx tarsalis | 3 |
| Other | 2 |

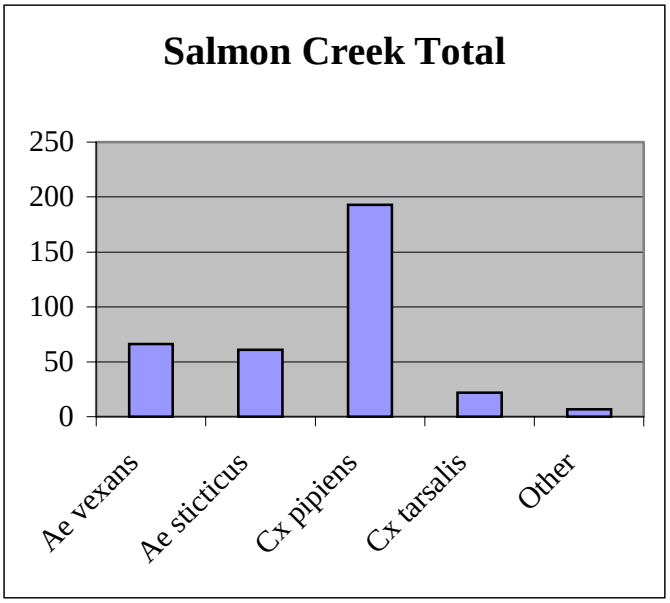


# SALMON CREEK RESULTS

On July 9 of this year three traps were placed in the Salmon Creek area. The traps collected a total of 1000+ mosquitoes, and of those, 350 were identified. On anomaly was the large percentage of Culex found at Pine Crest Golf Course and the Felida moorage. This led the crews to look for habitats other than floodwater areas.

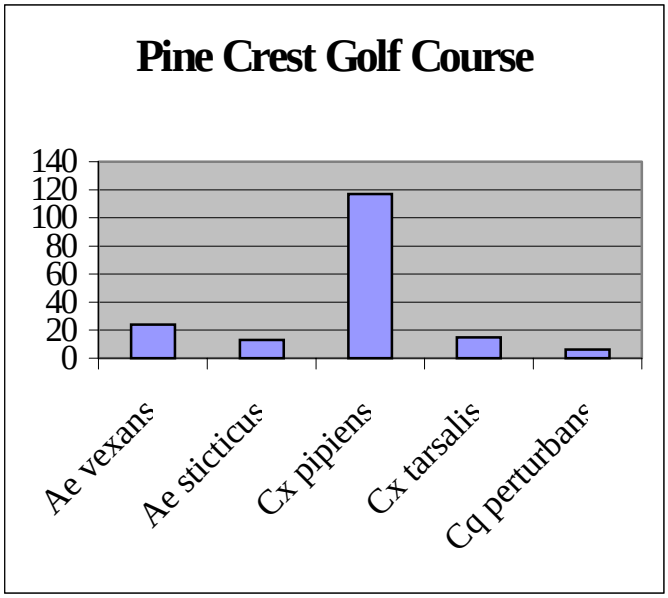
**SALMON CREEK TOTAL**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 66 |
| Ae sticticus | 61 |
| Cx pipiens | 193 |
| Cx tarsalis | 22 |
| Other | 7 |



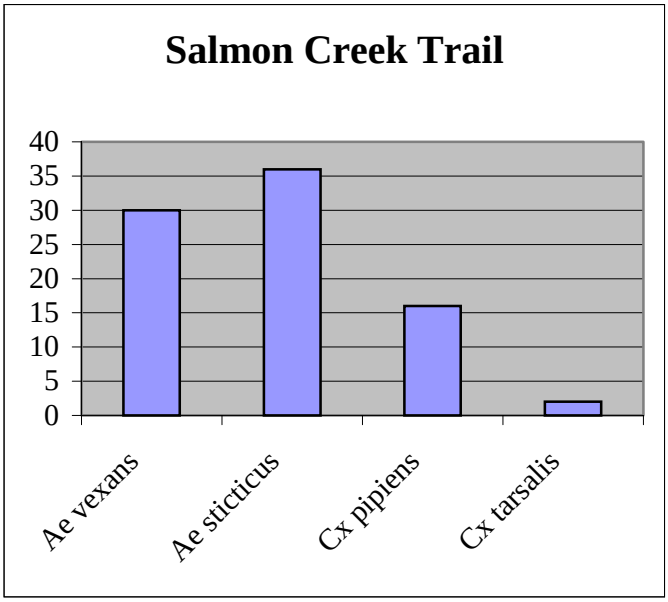

**PINE CREST GOLF COURSE**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 24 |
| Ae sticticus | 13 |
| Cx pipiens | 117 |
| Cx tarsalis | 15 |
| Cq perturbans | 6 |



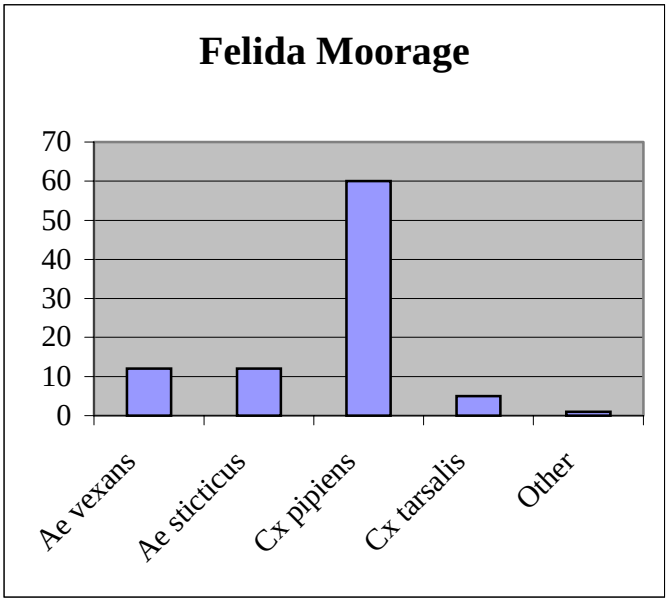
**SALMON CREEK TRAIL**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 30 |
| Ae sticticus | 36 |
| Cx pipiens | 16 |
| Cx tarsalis | 2 |




**FELIDA MOORAGE**

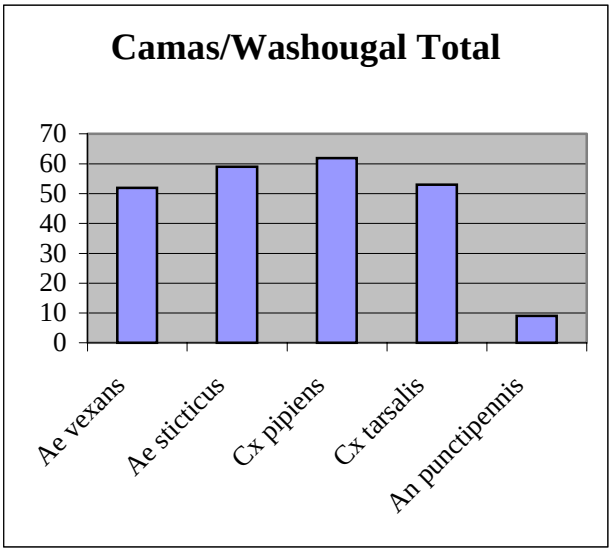
| SPECIES | NUMBER |
|---|---|
| Ae vexans | 12 |
| Ae sticticus | 12 |
| Cx pipiens | 60 |
| Cx tarsalis | 5 |
| Other | 1 |



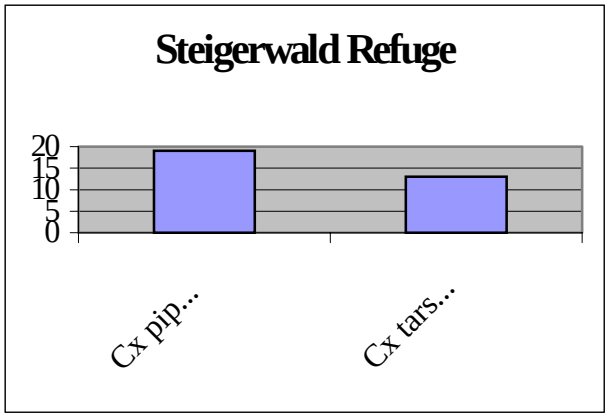
# CAMAS/WASHOUGAL RESULTS

The trapping on July 15 revealed the following results: Steigerwald Refuge was as suspected, as it is not affected by floodwater. The Washougal Race Track site showed a lot of Culex as the water was down and pooled at trapping time. Third Street Loop in Camas showed no surprises as this area is greatly influenced by floodwater and drains as the water level goes down.

| CAMAS/WASHOUGAL TOTAL | |
|---|---|
| **SPECIES** | **NUMBER** |
| Ae vexans | 52 |
| Ae sticticus | 59 |
| Cx pipiens | 62 |
| Cx tarsalis | 53 |
| An punctipennis | 9 |

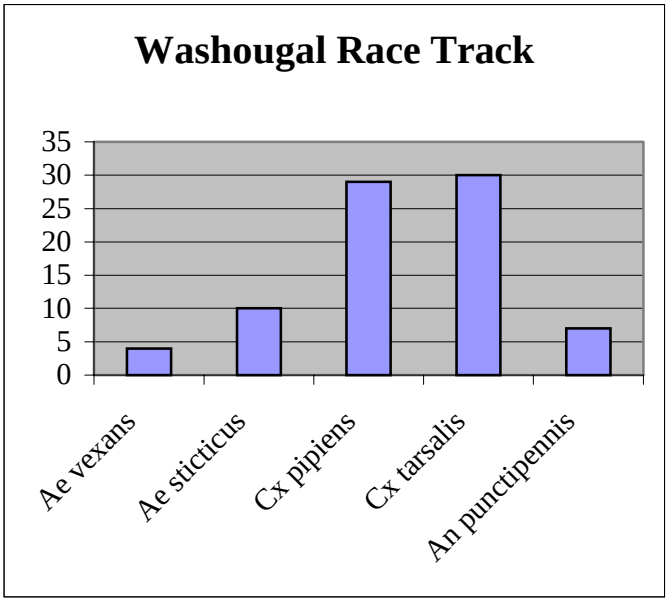



| STEIGERWALD REFUGE | |
|---|---|
| **SPECIES** | **NUMBER** |
| Cx pipiens | 19 |
| Cx tarsalis | 13 |



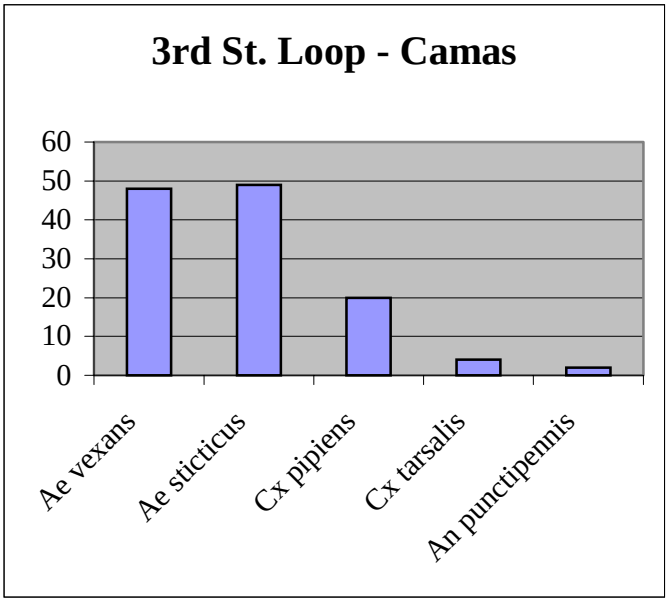
**WASHOUGAL RACE TRACK**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 4 |
| Ae sticticus | 10 |
| Cx pipiens | 29 |
| Cx tarsalis | 30 |
| An punctipennis | 7 |




**3rd STREET LOOP – CAMAS**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 48 |
| Ae sticticus | 49 |
| Cx pipiens | 20 |
| Cx tarsalis | 4 |
| An punctipennis | 2 |

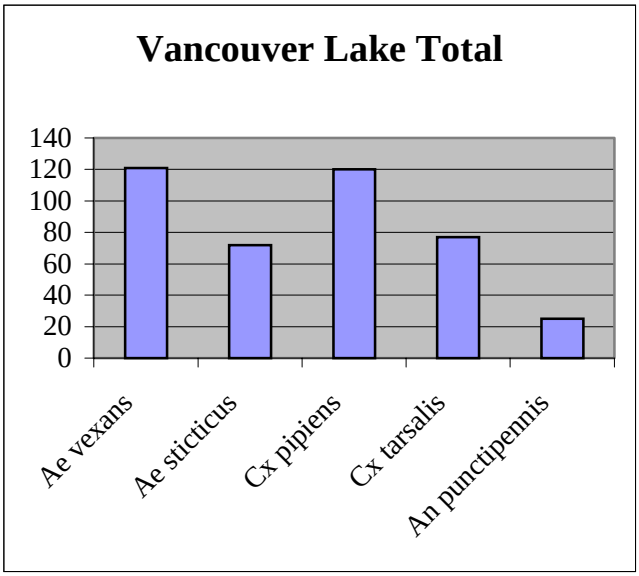


## VANCOUVER LAKE RESULTS

Three traps, set on July 16 of this year, collected 830 mosquitoes. 415 of these identified. As the river level was down at the time of trapping, the results showed an expected mix of Aedes (floodwater) and Culex (pond) mosquitoes.

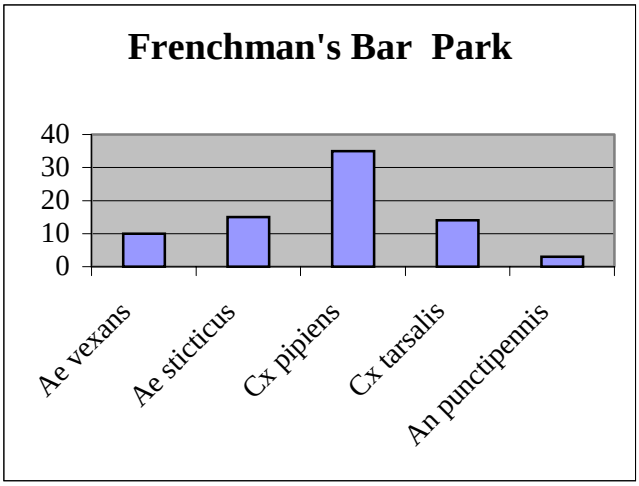
**VANCOUVER LAKE TOTAL**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 121 |
| Ae sticticus | 72 |
| Cx pipiens | 120 |
| Cx tarsalis | 77 |
| An punctipennis | 25 |



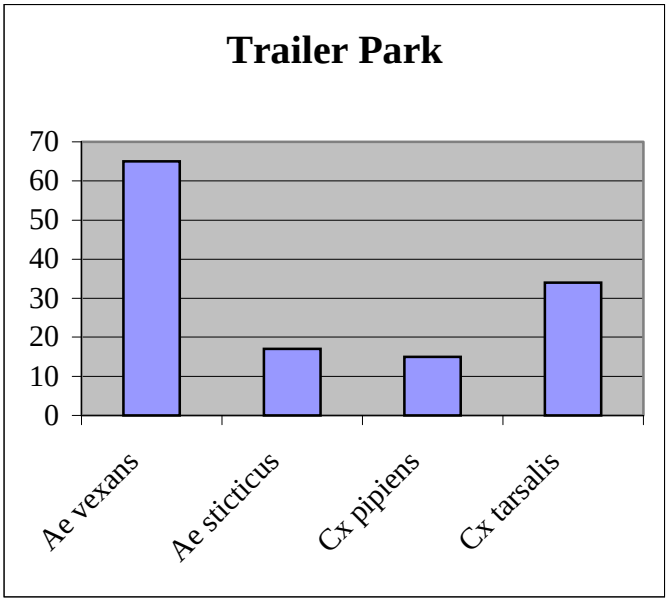

**FRENCHMAN'S BAR**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 10 |
| Ae sticticus | 15 |
| Cx pipiens | 35 |
| Cx tarsalis | 14 |
| An punctipennis | 3 |



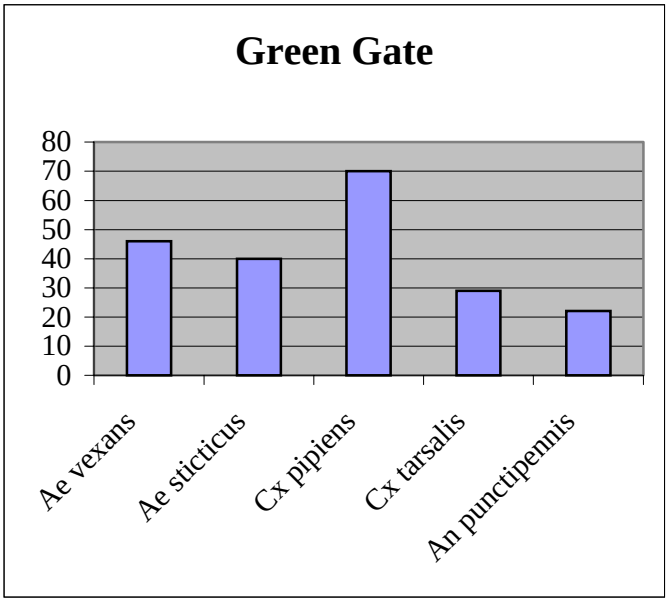
**TRAILER PARK**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 65 |
| Ae sticticus | 17 |
| Cx pipiens | 15 |
| Cx tarsalis | 34 |




**GREEN GATE**

| SPECIES | NUMBER |
|---|---|
| Ae vexans | 46 |
| Ae sticticus | 40 |
| Cx pipiens | 70 |
| Cx tarsalis | 29 |
| An punctipennis | 22 |



# Mosquito Trapping Report – East Sewage
# 9-16-02

Traps were set at East Sewage on 9-13-02. Two traps were placed in the "scum treatment" (?) room. Brad knows where. The traps were left over the weekend and retrieved on Monday morning. Over 3000 mosquitoes were collected. Of this number approximately 150 were positively identified under the microscope. All of the mosquitoes identified were **Culex pipiens.* No other species was present.

As we speak, a treatment plan is being worked on so that this problem can be addressed.

**Culex pipiens* – Larvae occur in a variety of foul water sources which are high in organic content (i.e., septic tanks, dairy ponds, catch basins, etc.) Overwintering is as adult females. Females feed at dusk or later, readily entering dwellings to do so, prefer avian host, although they may feed on large mammals and man. They are suspected secondary vectors of SLE (St. Louis Encephalitis) and West Nile Virus.

# TRAPPING SITES

| | | | | DATE | | | |
|---|---|---|---|---|---|---|---|
| **AREA** | **SITE** | **SITE #** | **DIP SITE** | 7/2/02 | 7/9/02 | 7/15/02 | 7/16/02 |
| Ridgefield | Carty Unit | 14-42-13-a1 | 14019 | X | | | |
| | River "S" | 14-33-24-c3 | 0 | X | | | |
| | Sunset Lane | 14-34-19-d3 | 0 | X | | | |
| Salmon Creek | Pine Crest Golf Course | 18-25-21-d3 | 10022 | | X | | |
| | Salmon Creek Trail | 10-25-28-b4 | 10030 | | X | | |
| | Felida Moorage | 10-25-29-d4 | 10010 | | X | | |
| Vancouver Lake | Frenchman's Bar Park | 10-15-1-a4 | 10033 | | | | X |
| | Vancouver Lake Trailer Park | 10-16-9-d1 | 10009 | | | | X |
| | Vancouver Lake Park | 10-16-6-a2 | 10025 | | | | X |
| Camas/Washougal | Steigerwald Refuge | 15-5-22-b1 | 15005 | | | X | |
| | Washougal Racetrack | 15-4-20-b2 | 15001 | | | X | |
| | 3rd Street Loop – Camas | 11-3-12-a3 | 11001 | | | X | |

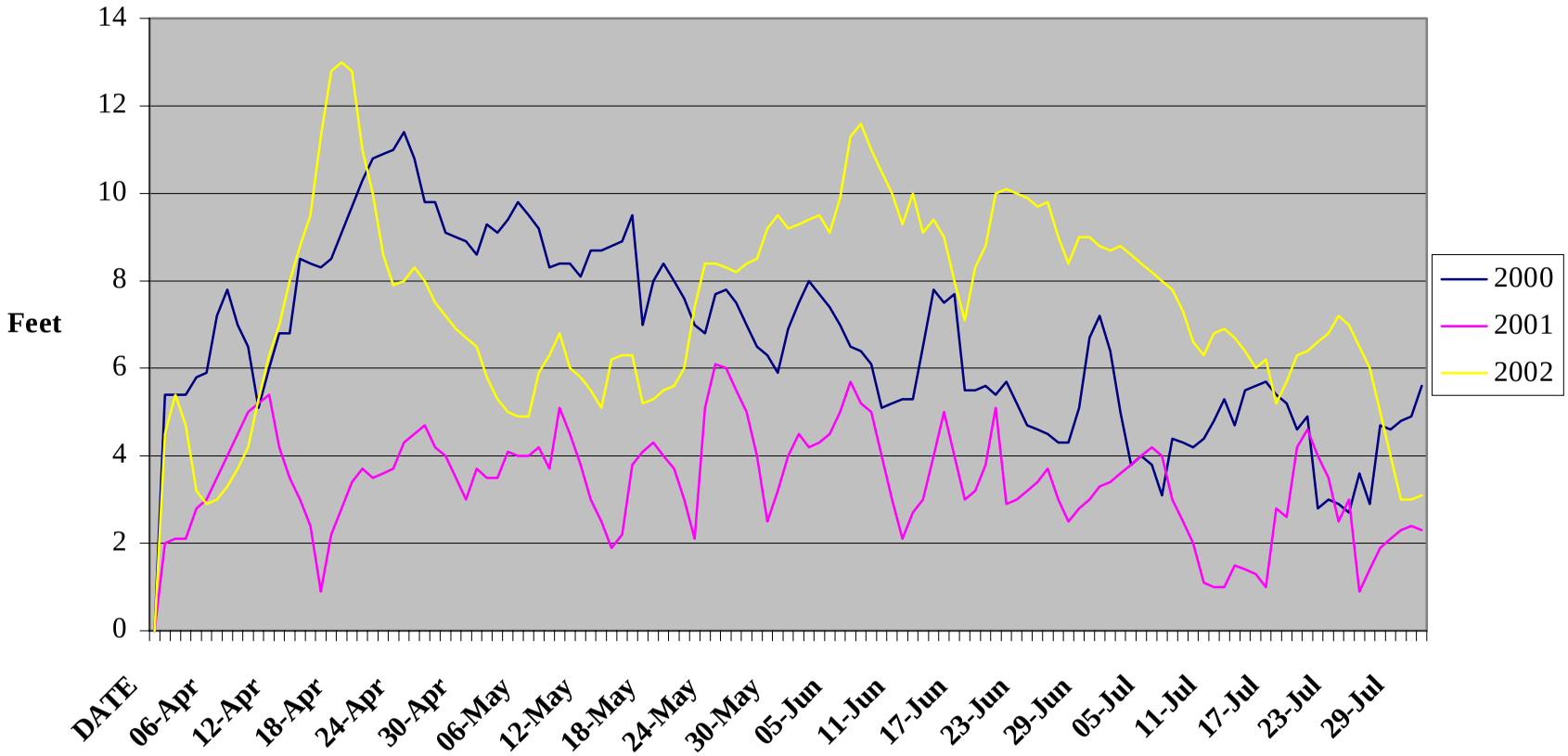
# ENCEPHALITIS VIRUS SURVEILLANCE TRAP

Top — Bail bucket. Baited with 3-4 pounds of dry ice. The dry ice releases $CO_2$ which mimics a potential food source.

Middle — Motor. Contains a small motor powered by three “D” cell batteries. These drive a small fan that blows the mosquitoes into the third section.

Bottom — Catch bag. Nylon mesh bag reinforced with a paper can to keep the mosquitoes protected in transit.

# River Level Comparison



# MOSQUITO IDENTIFICATION

| Sample Date | Location | Dip Site # | Stage | Species | I.D. Date | I.D. By |
|---|---|---|---|---|---|---|
| 09/20/2001 | 8301 NE 41 Av | 77194 | Adult | Cx pipiens | 04/11/2002 | CRS |
| 09/24/2001 | West Sewage | 10011 | Adult | Cx pipiens | 04/11/2002 | CRS |
| 10/01/2001 | Boise Pond | 10005 | Adult | Cx pipiens | 04/11/2002 | CRS |
| 10/17/2001 | Wash. Sewage | 15006 | Adult | Cx pipiens | 04/11/2002 | CRS |
| 10/17/2001 | Wash. Sewage | 15005 | Larva | Cx pipiens | 04/11/2002 | CRS |
| 04/02/2002 | Round Lake | 10008 | Adult | Ae. Excrucians | 04/11/2002 | CRS |
| 04/15/2002 | Alcoa Trail | 10006 | Adult | Ae. Vexans | 05/14/2002 | CRS |
| 04/19/2002 | Carty Unit | 14046 | Adult | Ae. Increpitus | 05/14/2002 | CRS |
| 04/24/2002 | 512 E 17 St L. C. | 0 | Adult | Cu impatiens | 05/14/2002 | CRS |
| 04/29/2002 | Frenchman's Bar | 10032 | Larva | Ae. vexans | 05/14/2002 | CRS |
| 04/29/2002 | Frenchman's Bar | 10034 | Larva | Ae. Vexans | 05/14/2002 | CRS |
| 04/29/2002 | Reed Island | 15003 | Larva | Ae. Vexans | 05/14/2002 | CRS |
| 05/08/2002 | East Sewage | 10013 | Larva | Cx pipiens | 05/17/2002 | CRS |
| 05/13/2002 | Dead Lake Area | 11005 | Larva | Ae. Cinereus | 05/17/2002 | CRS |
| 05/17/2002 | 16600 NE 65 Cir | 77171 | Adult | An. Freeborni | 05/28/2002 | CRS |
| 05/21/2002 | 8800 NE 137 Av | 77007 | Adult | Cx pipiens | 06/04/2002 | CRS |
| 05/21/2002 | 8700 Evergreen Hwy | 77098 | Adult | Cu incidens | 06/04/2002 | CRS |
| 05/21/2002 | 8700 Evergreen Hwy | 77098 | L & A | Cx pipiens | 06/04/2002 | CRS |
| 05/21/2002 | NE 122 St & 212 Ave | 0 | L & A | Cu incidens | 06/04/2002 | CRS |
| 05/28/2002 | 6411 Hwy 99 (Tires) | 0 | Larva | Cu incidens | 06/04/2002 | CRS |
| 05/28/2002 | 1900 NE 99 St | 77209 | Adult | Cu territans | 06/10/2002 | CRS |
| 05/28/2002 | 10900 Blk NE 20 Ct | 77106 | Adult | Cu territans | 06/10/2002 | CRS |
| 05/30/2002 | NE 96 St & 26 Av | 77224 | Adult | Cx pipiens | 06/10/2002 | CRS |
| 05/31/2002 | Morgan's Long Meadow | 14003 | L & A | Ae. Vexans | 06/10/2002 | CRS |
| 06/03/2002 | Green Gate S. End | 10025 | Larva | Ae. Vexans | 06/11/2002 | CRS |
| 06/04/2002 | Mulligan's Slough | 10001 | L & A | Ae. Vexans | 06/12/2002 | CRS |

| Sample Date | Location | Dip Site # | Stage | Species | I.D. Date | I.D. By |
|---|---|---|---|---|---|---|
| 06/06/2002 | 3rd St Loop | 11001 | Adult | Ae.vexans | 06/13/2002 | CRS |
| 06/06/2002 | Washougal Sewage | 15007 | Adult | Cx pipiens | 06/11/2002 | CRS |
| 06/07/2002 | Franz Lake Refuge | 0 | Adult | Ae. Vexans | 06/12/2002 | CRS |
| 06/07/2002 | Franz Lake Refuge | 0 | Adult | Ae. Sticticus | 06/12/2002 | CRS |
| 06/07/2002 | Franz Lake Refuge | 0 | Larva | Ae. Sticticus | 06/10/2002 | CRS |
| 06/10/2002 | 12909 NE 101 St | 0 | Larva | Cx pipiens | 06/12/2002 | CRS |
| 06/10/2002 | Dump Station | 77148 | Larva | Cx pipiens | 06/11/2002 | CRS |
| 06/11/2002 | 3rd St Loop | 11001 | Adult | Ae. Sticticus | 06/13/2002 | CRS |
| 06/12/2002 | Reed Island | 15003 | Larva | Ae. Vexans | 06/13/2002 | CRS |
| 06/13/2002 | Oaks Park - Camas | 11008 | Adult | Ae. Sticticus | 06/26/2002 | CRS |
| 06/18/2002 | River "S" Unit | 14060 | Adult | Ae. Sticticus | 06/25/2002 | CRS |
| 06/18/2002 | Salmon Creek | 18007 | Adult | Cu particeps | 07/01/2002 | Jill T |
| 06/19/2002 | Pine Crest Golf Course | 18008 | Adult | Ae. Sticticus | 06/25/2002 | CRS |
| 06/19/2002 | Salmon Creek | 18007 | Adult | Ae. Sticticus | 06/25/2002 | CRS |
| 06/19/2002 | Frenchman’s Bar | 10034 | Adult | Cx pipiens | 06/26/2002 | CRS |
| 06/19/2002 | NE 141 St & 10 Ave | 77066 | Adult | Cx pipiens | 06/26/2002 | CRS |
| 06/20/2002 | Dump Station | 77148 | Adult | Cx pipiens | 07/01/2002 | CRS |
| 06/24/2002 | Washougal Sewage | 15006 | Adult | Cx pipiens | 07/02/2002 | CRS |
| 06/24/2002 | Kessler’s - Trap | 0 | Adult | Cx pipiens | 07/02/2002 | CRS |
| 06/24/2002 | Kadow’s - East | 10035 | Larva | Cx tarsalis | 06/25/2002 | CRS |
| 06/24/2002 | East Sewage | 10013 | L & A | Cx pipiens | 07/01/2002 | CRS |
| 06/25/2002 | Skamania Landing | 0 | Adult | Ae. Vexans | 07/01/2002 | CRS |
| 06/26/2002 | 3400 NE 66 St - (tires) | 0 | Adult | Cu incidens | 07/08/2002 | CRS |
| 06/28/2002 | Franz Lake E Pond | 0 | Adult | Ae. Sticticus | 07/08/2002 | CRS |
| 06/28/2002 | Franz Lake E Pond | 0 | Adult | Ae. Vexans | 07/08/2002 | CRS |
| 06/28/2002 | Franz Lake E Swale | 0 | Adult | Cx pipiens | 07/08/2002 | CRS |
| 07/02/2002 | 3703 Q St - Wash. | 77095 | Adult | Cx pipiens | 07/10/2002 | CRS |
| 07/10/2002 | Dump Station | 77148 | Adult | Cx pipiens | 07/17/2002 | CRS |
| 07/15/2002 | 2100 NW 32 Cir - Ca | 0 | Adult | Midges | 07/24/2002 | CRS |
| 07/23/2002 | 11401 NE 33 Ave | 77136 | Larva | Cu incidens | 07/24/2002 | CRS |

| Sample Date | Location | Dip Site # | Stage | Species | I.D. Date | I.D. By |
|---|---|---|---|---|---|---|
| 07/24/2002 | NW 90 Cir & 4 Ave | 77122 | Adult | Cx pipiens | 08/15/2002 | CRS |
| 07/24/2002 | 8501 Evergreen Hwy | 77098 | Adult | Cx pipiens | 08/09/2002 | CRS |
| 07/24/2002 | 8501 Evergreen Hwy | 77098 | Adult | Cx tarsalis | 08/09/2002 | CRS |
| 07/29/2002 | Wash. Mill Pond | 15008 | Adult | Cx pipiens | 08/12/2002 | CRS |
| 07/29/2002 | Wash. Mill Pond | 15008 | Adult | Cx tarsalis | 08/12/2002 | CRS |
| 08/01/2002 | 20700 NE 101 Ave | 77306 | Larva | Cx tarsalis | 08/15/2002 | CRS |
| 08/06/2002 | NE 140 St & 8 Ave | 0 | Adult | Cx tarsalis | 08/15/2002 | CRS |
| 08/06/2002 | NE 140 St & 8 Ave | 0 | Larva | Cx pipiens | 08/15/2002 | CRS |
| 08/06/2002 | NE 140 St & 8 Ave | 0 | L & A | Cu incidens | 08/15/2002 | CRS |
| 08/07/2002 | Washougal Sewage | 15006 | Adult | Cx pipiens | 08/15/2002 | CRS |
| 08/07/2002 | Lady Island | 11002 | Adult | Cx pipiens | 08/14/2002 | CRS |
| 08/12/2002 | Washougal Mill Pond | 15008 | Adult | Cx pipiens | 08/23/2002 | CRS |
| 08/14/2002 | 11501 NW 38 Ave | 0 | Larva | Cx pipiens | 08/15/2002 | CRS |
| 08/14/2002 | 11501 NW 38 Ave | 0 | Larva | Cu incidens | 08/15/2002 | CRS |
| 08/26/2002 | Washougal Sewage | 15006 | Adult | Cx pipiens | 09/12/2002 | CRS |
| 08/26/2002 | Washougal Mill Pond | 15008 | Adult | Cx pipiens | 09/19/2002 | CRS |
| 09/17/2002 | Covington Rd & 102 Av | 77151 | Adult | Cx pipiens | 09/25/2002 | CRS |
| 09/19/2002 | NW 127 St & 36 Ave | 0 | Larva | Cx pipiens | 09/23/2002 | CRS |
| 09/19/2002 | NW 127 St & 36 Ave | 0 | Larva | Cu incidens | 09/23/2002 | CRS |
| 09/19/2002 | SE 16 St & Ellsworth | 77078 | Adult | Cx pipiens | 09/25/2002 | CRS |
| 09/19/2002 | 10900 Block NE 20 Ct | 77106 | Adult | Cx pipiens | 09/25/2002 | CRS |
| 09/23/2002 | SR 503 @ Salmon Cr | 0 | Larva | An punctipennis | 09/24/2002 | CRS |
| 09/23/2002 | SR 503 @ Salmon Cr | 0 | Larva | Cx territans | 09/24/2002 | CRS |